

REMARKS

Applicants respectfully request reconsideration of this application as amended. Claims 1-31 are pending in the application. Claims 1, 6, 12, 13, 17, 18, and 24 have been amended. Claims 32-140 have been added. Claims 25-31 have been cancelled.

The examiner stated that this application appears to be a division of application serial no. 09/738,086, filed 12/15/2000. The application in fact is a continuation-in-part of that application and therefore includes portions of material from that application as well as additional matter. Thus, Applicants believe the application sets forth information necessary to satisfy best mode and enablement. Therefore, Applicants do not believe the application needs correction. However, if the Examiner sets forth specific subject matter that is believed to be unnecessary, Applicants will take the necessary steps to put the application in condition for allowance.

The Examiner objected to Claim 1 due to some informalities. Applicant has amended Claim 1 to overcome the objection. Applicants respectfully request the Examiner to withdraw the objection.

Applicants have amended the claims, particularly to overcome the Examiner's rejection of indefiniteness under 35 U.S.C. §112 and to more clearly distinguish the invention from the prior art cited. The Examiner initially rejected claims 1 and 12 under 35 U.S.C. §112, second paragraph. Accordingly, Applicants have amended claims 1, 6, 12, 13, 17, 18, and 24 to particularly point out and distinctly claim, in full, clear, concise and exact terms, the subject matter which Applicants regard as their invention.

The Examiner rejected Claims 1-5, and 7-9 under 35 U.S.C. §103(a) as being unpatentable over Cimini et al. in view of Hakkinen. (Although the Examiner stated that Claims 1-5, and 7-9 under 35 U.S.C. §103(a) were unpatentable over Cimini et al. by itself, the text of

the office action indicated that the Examiner's intention was to reject Claims 1-5 and 7-9 under the combination.)

The present invention as claimed in Claim 1 as amended sets forth the following:

1. A method for subcarrier selection for a system employing orthogonal frequency division multiple access (OFDMA) comprising:
partitioning subcarriers into a plurality of groups of at least one cluster of subcarriers; and
receiving an indication of a selection by a subscriber of one or more groups in the plurality of groups; and
allocating at least one cluster in the one or more groups of clusters selected by the subscriber for use in communication with the subscriber, such that the at least one cluster of subcarriers is only allocated to one subscriber.
(emphasis added)

Thus, Claim 1 as amended sets forth a method of subcarrier selection employing OFDMA. Cimini discloses a clustered OFDM communication system in which a modulation device modulates encoded digital data symbols using OFDM. As admitted by the Examiner, Cimini does not explicitly teach OFDM channels being used for multiple-access. However, the Examiner sets forth that Hakkinen teaches spread coding of a transmission signal according to a CDMA method and signal modulation by subcarriers according to an OFDMA method. Thus, the Examiner believes one skilled in the art would combine the teachings of Cimini and Hakkinen to arrive at the present invention as claimed. Applicant respectfully disagrees.

The multiple-access described by Hakkinen (i.e., spreading across subcarriers and multi-user detection in a receiver) is not the same as OFDMA. In OFDMA, each cluster/subcarrier can only be allocated to one subscriber. Claim 1 has been amended to include this limitation. This restriction eliminates the intra-cell interference. Therefore, no multi-user detection is needed in the receiver as it is in Hakkinen. Thus, Cimini and Hakkinen, alone or in combination, do not teach, mention or disclose allocating a cluster in the one or more groups of clusters selected by the subscriber for use in communication with the subscriber, such that a cluster of subcarriers is

only allocated to one subscriber. In view of this, Applicant respectfully submits that the present invention as claimed in Claims 1-5, and 7-9 are not obvious in view of Cimini and Hakkinen.

Furthermore, with respect to Claims 4 and 5, while Cimini does mention data transmission over the entire bandwidth, Cimini does not teach clusters being space apart as set forth in Claim 4, nor does Cimini teach that the clusters have been spaced apart farther than coherent bandwidth (e.g., for diversity purpose) as set forth in Claim 5. In view of this, Applicant respectfully submits that the present invention as claimed in Claims 4 and 5 is not obvious in view of Cimini and Hakkinen.

Furthermore, with respect to Claim 9, the pilot signal (e.g., from the base-station to subscribers) carries information of the *available* clusters. In contrast, Cimini discloses that the subscriber feedback includes the preferred clusters regardless whether they are available at the base-station. In view of this, Applicant respectfully submits that the present invention as claimed in Claim 9 is not obvious in view of Cimini and Hakkinen.

The Examiner rejected Claims 10-12 and 23 under 35 U.S.C. §103(a) as being unpatentable over Cimini et al. in view of Hakkinen, and further in view of Rashid-Farrokhie et al. As set forth above with respect to Claim 1, Cimini and Hakkinen do not disclose allocating a cluster in the one or more groups of clusters selected by the subscriber for use in communication with the subscriber, such that a cluster of subcarriers is only allocated to one subscriber. Farrokhi does not overcome this deficiency. Farrokhi discloses sending channel estimates and SINR determinations to a base station in a CDMA system. However, Farrokhi does not disclose allocating a cluster in the one or more groups of clusters selected by the subscriber for use in communication with the subscriber, such that a cluster of subcarriers is only allocated to one subscriber. In view of this, Applicant respectfully submits that the present invention as claimed in Claims 10-12 and 23 are not obvious in view of Cimini, Hakkinen and Farrokhi.

Furthermore, with respect to Claim 11, in Farrokhi, the channel characteristics (e.g., SINR) associated with each clusters must be feedback with an index (or ordered), which increases the signaling overhead. As set forth in Claim 11, the subscriber has a fixed association with a group of clusters. This enables the feedback overhead to be significantly reduced. In view of this, Applicant respectfully submits that the present invention as claimed in Claim 11 is not obvious in view of Cimini, Hakkinen and Farrokhi.

Furthermore, with respect to Claim 12, the feedback information is ordered based on SINR values. The ordering reduces the signaling overhead. Cimini, Hakkinen and Farrokhi do not disclose such an ordering scheme. In view of this, Applicant respectfully submits that the present invention as claimed in Claim 12 is not obvious in view of Cimini, Hakkinen and Farrokhi.

The Examiner rejected Claim 16 under 35 U.S.C. §103(a) as being unpatentable over Cimini et al. in view of Farrokhi, and further in view of Martinez et al. As set forth above, Cimini and Farrokhi do not disclose allocating a cluster in the one or more groups of clusters selected by the subscriber for use in communication with the subscriber, such that a cluster of subcarriers is only allocated to one subscriber. Martinez does not overcome this deficiency.

Furthermore, none of the references discloses feeding back channel characteristics using error correction codes. In view of this, Applicant respectfully submits that the present invention as claimed in Claim 12 is not obvious in view of Cimini, Farrokhi, and Martinez.

Applicant has added Claims 32-140. Claims 32-53 are dependent upon Claim 6, which the examiner indicated is allowable. These claims correspond to other features found in claims 2-24, with the exception of claim 6. Claim 54 is an apparatus claim directed to similar features found in Claim 6. Applicant respectfully submits that Claims 32-54 are in condition for allowance.

Claims 55-74 are dependent upon Claim 13, which the examiner indicated is allowable. These claims correspond to other features found in claims 2-24, with the exception of claims 13-15. Claim 75 is an apparatus claim directed to similar features found in Claim 13. Applicant respectfully submits that Claims 55-75 are in condition for allowance.

Claims 76-97 are dependent upon Claim 17, which the examiner indicated is allowable. These claims correspond to other features found in claims 2-24, with the exception of claim 17. Claim 98 is an apparatus claim directed to similar features found in Claim 17. Applicant respectfully submits that Claims 76-98 are in condition for allowance.

Claims 99-115 are dependent upon Claim 18, which the examiner indicated is allowable. These claims correspond to other features found in claims 2-24, with the exception of claims 18-22. Claim 116 is an apparatus claim directed to similar features found in Claim 18. Applicant respectfully submits that Claims 99-116 are in condition for allowance.

Claims 117-138 are dependent upon Claim 24, which the examiner indicated is allowable. These claims correspond to other features found in claims 2-23. Claim 139 is an apparatus claim directed to similar features found in Claim 24. Applicant respectfully submits that Claims 117-139 are in condition for allowance.

Claim 140 is an apparatus claim directed to similar features found in Claim 1. Applicant respectfully submits that Claim 140 is in condition for allowance for the same reasons given above with respect to Claim 1.


Accordingly, Applicants respectfully submits that the rejections under 35 U.S.C. §103(a) have been overcome by the amendments and the remarks and withdrawal of these rejections is respectfully requested. Applicants submit that Claims 1-24 as amended and claims 32-140 as added are now in condition for allowance and such action is earnestly solicited.

Please charge any shortages and credit any overcharges to our Deposit Account No. 02-2666.

Respectfully submitted,

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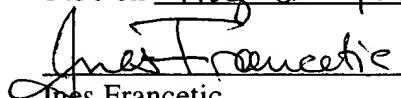
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Ines Francetic

8/9/04

Date